

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Previously presented) A voice and data communication system comprising a customer premises equipment (CPE) element and a line card for transferring communication signals between a subscriber and a network, said line card comprising:

a broadband analog front end for coupling said line card to said CPE through a transmission medium;

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice and data packets to said CPE; and

a system interface for coupling said line card to at least one network;

wherein said line card digitizes and packetizes said voice signals upon failure of said CPE, wherein said CPE comprises:

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice packets; and

a switch for bypassing said packetizing system to a Plain Old Telephone System (POTS) terminal, wherein said switch is a relay for switching between said packetizer and said POTS system, wherein the position of said switch is determined by a signal, said signal indicating the status of the connection between said CPE and said line card.

5. (Cancelled)

6. (Previously presented) A voice and data communication system comprising a customer premises equipment (CPE) element and a line card for transferring communication signals between a subscriber and a network, said line card comprising:

a broadband analog front end for coupling said line card to said CPE through a transmission medium;

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice and data packets to said CPE; and

a system interface for coupling said line card to at least one network;

wherein said line card digitizes and packetizes said voice signals upon failure of said CPE, wherein said CPE comprises:

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice packets; and

a switch for bypassing said packetizing system to a Plain Old Telephone System (POTS) terminal, wherein said line card packetizes said voice signals upon failure of said CPE to do so, and wherein digitizing and packetizing equipment of said CPE is bypassed.

7. (Previously presented) A voice and data communication system comprising a customer premises equipment (CPE) element and a line card for transferring communication signals between a subscriber and a network, said line card comprising:

- a broadband analog front end for coupling said line card to said CPE through a transmission medium;

- a digitizer for digitizing received voice signals;

- a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

- a modem for transmitting voice and data packets to said CPE; and

- a system interface for coupling said line card to at least one network;

wherein said line card digitizes and packetizes said voice signals upon failure of said CPE, wherein said CPE comprises:

- a digitizer for digitizing received voice signals;

- a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

- a modem for transmitting voice packets; and

- a switch for bypassing said packetizing system to a Plain Old Telephone System (POTS) terminal, wherein said failure is a power failure at said subscriber's location.

8. (Previously presented) A voice and data communication system comprising a customer premises equipment (CPE) element and a line card for

transferring communication signals between a subscriber and a network, said line card comprising:

- a broadband analog front end for coupling said line card to said CPE through a transmission medium;

- a digitizer for digitizing received voice signals;

- a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

- a modem for transmitting voice packets to said CPE; and

- a system interface for coupling said line card to at least one network;

wherein said line card digitizes and packetizes said voice signals upon failure of said CPE, wherein said CPE comprises:

- a digitizer for digitizing received voice signals;

- a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

- a modem for transmitting voice packets; and

- a switch for bypassing said packetizing system to a Plain Old Telephone System (POTS) terminal, wherein said failure is inability to synchronize a DSL modem on said CPE with a DSL modem on said line card.

9. (Previously presented) A voice and data communication system comprising a customer premises equipment (CPE) element and a line card for transferring communication signals between a subscriber and a network, said line card comprising:

- a broadband analog front end for coupling said line card to said CPE through a transmission medium;

- a digitizer for digitizing received voice signals;

- a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice and data packets to said CPE; and
a system interface for coupling said line card to at least one network;
wherein said line card digitizes and packetizes said voice signals upon failure
of said CPE, wherein said CPE comprises:
a digitizer for digitizing received voice signals;
a packetizer for packetizing said digitized voice signals, wherein said
packetizer performs at least one of voice over internet protocol (VoIP) and voice
over asynchronous transfer mode (VoATM) packetization;
a modem for transmitting voice packets; and
a switch for bypassing said packetizing system to a Plain Old Telephone
System (POTS) terminal, wherein said digitizers provide enhanced packet voice
audio encoding.

10. (Previously presented) A voice and data communication system
comprising a customer premises equipment (CPE) element and a line card for
transferring communication signals between a subscriber and a network, said line
card comprising:

a broadband analog front end for coupling said line card to said CPE through
a transmission medium;
a digitizer for digitizing received voice signals;
a packetizer for packetizing said digitized voice signals, wherein said
packetizer performs at least one of voice over internet protocol (VoIP) and voice
over asynchronous transfer mode (VoATM) packetization;
a modem for transmitting voice and data packets to said CPE; and
a system interface for coupling said line card to at least one network;
wherein said line card digitizes and packetizes said voice signals upon failure
of said CPE, wherein said CPE comprises:
a digitizer for digitizing received voice signals;
a packetizer for packetizing said digitized voice signals, wherein said
packetizer performs at least one of voice over internet protocol (VoIP) and voice
over asynchronous transfer mode (VoATM) packetization;

a modem for transmitting voice packets; and
a switch for bypassing said packetizing system to a Plain Old Telephone System (POTS) terminal, wherein said packetizers provide enhanced packet voice audio encoding.

11. (Currently Amended) A system for providing a voice signal for transmission comprising a line card for receiving said voice signal from a telephone via a subscriber line, said line card including:

a front end for coupling said line card to said telephone;
a digitizer for digitizing received voice signals;
a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization; ~~and~~
a system interface for coupling said line card to a network; and
a merge controller circuit that controls said digitizer and said packetizer to digitize and packetize said voice signals upon failure of said telephone.

12. (Previously presented) A system as defined in claim 11, wherein said front end corresponds to a broadband analog front end, wherein said network corresponds to a voice network, wherein said system interface further couples said line card to a data network, and wherein said line card further comprises:

a modem for receiving voice packets from said CPE and transmitting a data signal to said data network,
wherein said line card is operative to receive said data signal on the same loop as said voice signal, and wherein said broadband analog front end separates said data signal from said voice signal.

13. (Previously presented) A system as defined in claim 12, wherein said modem is a DSL modem.

14. (Cancelled)

15. (Previously presented) The system of claim 11, wherein said front end corresponds to a broadband analog front end, and wherein said line card further includes:

a modem that transmits said packetized voice signals to said telephone via said broadband analog front end circuit.

16. (Previously presented) The system of claim 15, wherein said modem is a digital subscriber line (DSL) modem.

17. (Previously presented) The system of claim 15, wherein said line card is operative to receive a data signal on said subscriber line with said voice signal, wherein said broadband analog front end further separates said data signal from said voice signal, and wherein said modem transmits said data signal to said network.

18. (Previously presented) A system for providing a voice signal for transmission comprising a line card for receiving said voice signal from a telephone via a subscriber line, said line card including:

a front end for coupling said line card to said telephone;

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization; and

a system interface for coupling said line card to a network, wherein said front end corresponds to a broadband analog front end, and wherein said line card further includes:

a modem that transmits said packetized voice signals to said telephone via said broadband analog front end circuit, wherein said telephone comprises:

a second digitizer that digitizes second received voice signals;

a second packetizer that packetizes said second digitized voice signals, wherein said second packetizer performs at least one of said VoIP packetization and said VoATM packetization;

a second modem that transmits said second packetized voice signals to said line card via said subscriber line; and

a switch that selectively bypasses said second digitizer, said second packetizer, and said second modem to a plain old telephone system (POTS) terminal.

19. (Previously presented) The system of claim 18, wherein a position of said switch is determined by a signal, and wherein said signal indicates a status of a connection between said telephone and said line card.

20. (Previously presented) The system of claim 18, wherein failure of said telephone to packetize said second voice signals results in said line card packetizing said digitized voice signals and said switch bypassing said second packetizer.

21. (Previously presented) The system of claim 20, wherein said failure is a power failure at a subscriber location.

22. (Previously presented) The system of claim 20, wherein said failure is an inability to synchronize said modem and said second modem.

23. (Previously presented) The system of claim 11, wherein said packetizer circuit performs enhanced packet voice packetizing.

24. (Previously presented) The system of claim 11, wherein said digitizer circuit performs enhanced packet voice digitization.

25. (Previously presented) A system for providing a voice signal for transmission comprising a line card for receiving said voice signal from a telephone via a subscriber line, said line card including:

a front end for coupling said line card to said telephone;

a digitizer for digitizing received voice signals;

a packetizer for packetizing said digitized voice signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization; and

a system interface for coupling said line card to a network, wherein said system interface circuit further selectively couples said line card to one of said network and a second network, wherein said line card further comprises:

a merge controller that selectively controls said digitizer, said packetizer and said system interface with a control signal,

wherein a first aspect of said control signal corresponds to said packetized voice signals being sent to said network, and

wherein a second aspect of said control signal corresponds to unpacketized voice signals being sent to said second network, wherein said digitizer and said packetizer are bypassed.

26. (Previously presented) The system of claim 25, wherein said network comprises a multi service data network (MSDN), and wherein said first aspect of said control signal corresponds to a packetizing voice mode.

27. (Previously presented) The system of claim 25, wherein said second network comprises a public switched telephone network (PSTN), and wherein said second aspect of said control signal corresponds to a plain old telephone system (POTS) mode.

28. (Previously presented) The system of claim 11, wherein said digitizer circuit implements one of a μ -law code and an A-law code.

29. (Previously presented) The system of claim 11, wherein said telephone comprises a conventional telephone terminal.

30. (Previously presented) The system of claim 11, wherein said telephone comprises a packetizing telephone.

31. (Previously presented) An apparatus including an enhanced line card in a telecommunications system, said enhanced line card being a component of a telecommunications access equipment coupling at least one subscriber line to at least one telecommunications network, said enhanced line card comprising:

- a system interface that interfaces said enhanced line card to a first type of telecommunications network and a second type of telecommunications network;

- a packetizer, coupled to said system interface, that converts between packetized and non-packetized communication signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) and voice over asynchronous transfer mode (VoATM) packetization;

- a digitizer, coupled to said packetizer and said system interface, that converts between digital and analog communication signals;

- a modem, coupled to said system interface, that communicates digital subscriber line (DSL) signals;

- a broadband front end, coupled to said digitizer and said modem, that selectively communicates first communication signals between said digitizer and said at least one subscriber line and second communication signals between said modem and said at least one subscriber line; and

- a merge controller that controls said system interface, said packetizer, said digitizer, and said modem, wherein said merge controller selectively sends a first control signal, a second control signal, and a third control signal,

- wherein said first control signal controls said system interface, said packetizer and said digitizer to process third communication signals between said second type of telecommunications network and a first type of customer premises equipment (CPE),

wherein said second control signal controls said system interface and said digitizer to process fourth communication signals between said first type of telecommunications network and said first type of CPE, and

wherein said third control signal controls said system interface and said modem to process fifth communication signals between said second type of telecommunications network and a second type of CPE.

32. (Previously presented) The apparatus of claim 31, wherein said first type of telecommunications network comprises a public switched telephone network (PSTN).

33. (Previously presented) The apparatus of claim 31, wherein said second type of telecommunications network comprises a multi service data network (MSDN).

34. (Previously presented) The apparatus of claim 31, wherein said first control signal corresponds to a packetizing voice mode.

35. (Previously presented) The apparatus of claim 31, wherein said second control signal corresponds to a plain old telephone system (POTS) mode.

36. (Previously presented) The apparatus of claim 35, wherein said second control signal and said third control signal correspond to a simultaneous DSL/POTS mode.

37. (Previously presented) The apparatus of claim 31, wherein said third control signal corresponds to a DSL mode.

38. (Previously presented) The apparatus of claim 31, wherein said at least one subscriber line includes at least one analog subscriber line.

39. (Previously presented) The apparatus of claim 31, wherein said at least one subscriber line includes at least one digital subscriber line.

40. (Previously presented) The apparatus of claim 31, wherein said system interface interfaces said enhanced line card to a public switched telephone network (PSTN) and a multi service data network (MSDN).

41. (Previously presented) The apparatus of claim 31, wherein said packetizer comprises one of a voice over internet protocol (VoIP) engine and a voice over asynchronous transfer mode (VoATM) engine.

42. (Previously presented) The apparatus of claim 31, wherein said broadband front end communicates plain old telephone system (POTS) signals.

43. (Previously presented) The apparatus of claim 31, wherein said broadband front end communicates said DSL signals.

44. (Previously presented) The apparatus of claim 31, wherein said broadband front end communicates plain old telephone system (POTS) signals and said DSL signals.

45. (Previously presented) The apparatus of claim 31, wherein said digitizer implements one of a μ -law code and an A-law code.

46. (Previously presented) The apparatus of claim 31, wherein said digitizer and said packetizer implement enhanced packet voice communication.

47. (Previously presented) The apparatus of claim 31, wherein said modem comprises a DSL modem.

48. (Previously presented) The apparatus of claim 31, wherein said merge controller controls said enhanced line card to selectively communicate plain old telephone system (POTS) signals with a POTS subscriber, said DSL signals with a DSL subscriber, packetized voice signals with a packetized voice subscriber, and combined POTS/DSL signals with a combined POTS/DSL subscriber.

49. (Previously presented) The apparatus of claim 31, wherein said first type of CPE comprises a conventional telephone terminal.

50. (Previously presented) The apparatus of claim 31, wherein said second type of CPE comprises a packetizing CPE.

51. (Previously presented) An apparatus including an enhanced line card in a telecommunications system, said enhanced line card being a component of a telecommunications access equipment coupling at least one subscriber line to at least one telecommunications network, said enhanced line card comprising:

- a system interface that interfaces said enhanced line card to a first type of telecommunications network and a second type of telecommunications network;

- a packetizer, coupled to said system interface, that converts between packetized and non-packetized communication signals, wherein said packetizer performs at least one of voice over internet protocol (VoIP) or voice over asynchronous transfer mode (VoATM) packetization;

- a digitizer, coupled to said packetizer and said system interface, that converts between digital and analog communication signals;

- a front end, coupled to said digitizer, that communicates first communication signals between said digitizer and said at least one subscriber line; and

- a merge controller that controls said system interface, said packetizer, and said digitizer, wherein said merge controller selectively sends a first control signal and a second control signal,

- wherein said first control signal controls said system interface, said packetizer and said digitizer to process second communication signals between said

second type of telecommunications network and a conventional telephone terminal,
and

wherein said second control signal controls said system interface and
said digitizer to process third communication signals between said first type of
telecommunications network and said conventional telephone terminal.

52. (Previously presented) The apparatus of claim 51, wherein said front
end comprises a broadband front end, and wherein said enhanced line card further
comprises:

a modem, coupled between said system interface and said broadband front
end, that communicates digital subscriber line (DSL) signals,

wherein said broadband front end further selectively communicates
fourth communication signals between said modem and said at least one subscriber
line,

wherein said merge controller further controls said modem and
further selectively sends a third control signal, and

wherein said third control signal controls said system interface and
said modem to process fifth communication signals between said second type of
telecommunications network and a packetizing customer premises equipment.

53. (Previously presented) The apparatus of claim 51, wherein said first
type of telecommunications network comprises a public switched telephone network
(PSTN).

54. (Previously presented) The apparatus of claim 51, wherein said
second type of telecommunications network comprises a multi service data network
(MSDN).

55. (Previously presented) The apparatus of claim 51, wherein said first
control signal corresponds to a packetizing voice mode.

56. (Previously presented) The apparatus of claim 51, wherein said second control signal corresponds to a plain old telephone system (POTS) mode.

57. (Previously presented) The apparatus of claim 51, wherein said at least one subscriber line includes at least one analog subscriber line.

58. (Previously presented) The apparatus of claim 51, wherein said system interface interfaces said enhanced line card to a public switched telephone network (PSTN) and a multi service data network (MSDN).

59. (Previously presented) The apparatus of claim 51, wherein said packetizer comprises one of a voice over internet protocol (VoIP) engine and a voice over asynchronous transfer mode (VoATM) engine.

60. (Previously presented) The apparatus of claim 51, wherein said front end communicates plain old telephone system (POTS) signals.

61. (Previously presented) The apparatus of claim 51, wherein said digitizer implements one of a μ -law code and an A-law code.

62. (Previously presented) The apparatus of claim 51, wherein said digitizer and said packetizer implement enhanced packet voice communication.